

# PATENT COOPERATION TREATY

# PCT


## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 01 JUL 2005

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Applicant's or agent's file reference 010165WOJZF		<b>FOR FURTHER ACTION</b>		See Form PCT/PEA/416
International application No. PCT/US2004/008193		International filing date (day/month/year) 17.03.2004	Priority date (day/month/year) 27.03.2003	
International Patent Classification (IPC) or national classification and IPC B29C45/16				
Applicant OMNOVA SOLUTIONS INC. et al.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 9 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 4 sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input checked="" type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 12.10.2004		Date of completion of this report 30.06.2005		
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer  Kujat, C Telephone No. +49 89 2399-2360		



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/US2004/008193

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-5, 9-12 as originally filed

**Claims, Numbers**

1-10 filed with telefax on 18.02.2005

**Drawings, Sheets**

1/5-5/5 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing *(specify)*:
  - ☐ any table(s) related to sequence listing *(specify)*:
4. ☒ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☒ the claims, Nos. 4,8
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing *(specify)*:
  - ☐ any table(s) related to sequence listing *(specify)*:

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
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**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:
- ☐ the entire international application,
  - ☒ claims Nos. 1,10 filed with telefax of 18.2.2005  
because:
    - ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):
    - ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
    - ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
  - ☒ no international search report has been established for the said claims Nos. 1,10 filed with telefax of 18.2.2005
  - ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
    - the written form
      - ☐ has not been furnished
      - ☐ does not comply with the standard
    - the computer readable form
      - ☐ has not been furnished
      - ☐ does not comply with the standard
  - ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.
  - ☐ See separate sheet for further details

**INTERNATIONAL PRELIMINARY REPORT  
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International application No.  
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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	3-6,8
	No: Claims	1,2,7,9
Inventive step (IS)	Yes: Claims	
	No: Claims	1-9
Industrial applicability (IA)	Yes: Claims	1-9
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

Some of the amendments filed under Article 34 PCT relate to an invention in respect of which no international search report has been established:

- 1.1 With regard to the amendments "while said mould members (12, 14) remain a fixed distance apart relative to one another during and between injection moulding and in-mould coating" (amended **claim 1**) and "a means for holding said mould members (12, 14) a fixed distance relative to one another during and between injection moulding and in-mould coating" (amended **claim 10**), that feature was not included in the set of claims on which the International Search Report is based. An International Search Report has only been established for the feature "clamping mechanism 24 maintains a clamping pressure sufficient to maintain mould halves 12, 14 in closed relation" (page 9, lines 32 and 33), since that corresponds to the applicant's desire of keeping the cavity closed (see e.g. page 2, line 20).
- 1.2 Concerning the amendment "a second composition injector (32) having a single nozzle (64) fluidly connected" (amended **claim 1**), that feature was not included in the set of claims on which the International Search Report is based. No International Search Report has been established for that feature, since paragraph 39 of the description only vaguely refers to such an arrangement (page 12, line 10) as one alternative (page 12, line 12: "Another arrangements would employ separate IMC composition injectors...").

Some of the amendments filed under Article 34 PCT introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 19(2) PCT:

- 1.3 The amendment "for allowing relatively easy removal of thermoplastic material formed in said runner section (40) from said moulded articles formed in said plurality of mould cavities (34, 36)" (amended **claim 4**) introduces subject-matter which extends beyond the content of the application as filed. There does not seem to be

any passage in the application as filed which explicitly discloses that feature.

- 1.4 The amendment "a containment flange recess (40a)" (amended **claim 8**) introduces subject-matter which extends beyond the content of the application as filed. The corresponding passage of the description only discloses a "a containment flange (40a)" (page 11, lines 27 and 28).

**Therefore, the international preliminary examination authority, in conformity with Rule 66.2 (a) (vi) has decided not to carry out the international preliminary examination in respect of these claims. Instead, claims 1 to 9 as filed will be basis of the international preliminary examination.**

**Re Item V (for claims 1 to 9 as filed)**

The following documents are referred to in this communication:

- D1 : PATENT ABSTRACTS OF JAPAN vol. 1997, no. 06, 30 June 1997 (1997-06-30) -&; JP 9 039024 A (MATSUSHITA ELECTRIC WORKS LTD), 10 February 1997 (1997-02-10)  
D2 : EP 0 953 419 A (OREAL) 3 November 1999 (1999-11-03)  
D3: US 2002/039656 A1 (THOMPSON JOHN A ET AL) 4 April 2002 (2002-04-04)  
D4: PATENT ABSTRACTS OF JAPAN vol. 1995, no. 05, 30 June 1995 (1995-06-30) -& JP 7 032416 A (ASAHI CHEM IND CO LTD), 3 February 1995 (1995-02-03)

**2 INDEPENDENT CLAIM 1**

- 2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.  
Document D1 discloses (the references in parenthesis applying to this document): a moulding apparatus comprising a mould (1, 2) defining a plurality (paragraph 12: "two or more") of mould cavities (17), at least one first composition injector (13) fluidly connected (see figure 2) to said plurality of mould cavities suitable for delivering a first composition from which moulded articles can be formed, and at least one second

composition injector (6) fluidly connected (see figure 2) to said plurality of mould cavities suitable for delivering a second composition capable, upon curing, of forming an in-mould coating for said moulded articles in said plurality of mould cavities.

- 2.2 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

Document D2 discloses (the references in parenthesis applying to this document): a moulding apparatus comprising a mould (2a, 2b) defining a plurality (see figure 1) of mould cavities, at least one first composition injector (3, 6) fluidly connected (see figure 1) to said plurality of mould cavities suitable for delivering a first composition from which moulded articles can be formed, and at least one second composition injector (4, 7) fluidly connected (see figure 1) to said plurality of mould cavities suitable for delivering a second composition capable, upon curing, of forming an in-mould coating for said moulded articles in said plurality of mould cavities.

3 DEPENDENT CLAIMS 2, 7, 9

Dependent claims 2, 7, 9 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty (Article 33(2) PCT).

- 3.1 With regard to the additional features of dependent claim 2, document D1 already discloses a sprue passageway (18) fluidly connected (see figure 2) to said at least one first composition injector and a runner section (23) fluidly connected (see figure 2) to said sprue passageway and said plurality of mould cavities. Further, document D2 already discloses a sprue passageway (6) fluidly connected (see figure 1) to said at least one first composition injector and a runner section (6) fluidly connected (see figure 1) to said sprue passageway and said plurality of mould cavities.
- 3.2 With regard to the additional features of dependent claim 7, document D1 already discloses that each of said plurality of mould cavities has a volume that remains fixed (see figures 2 to 5 in contrast to figures 7 to 10) throughout the introduction of materials through said first and second composition injectors.

Further, document D2 already discloses that each of said plurality of mould cavities has a volume that remains fixed (column 2, line 7: "ayant même géométrie") throughout the introduction of materials through said first and second composition injectors.

- 3.3 With regard to the additional features of dependent claim 9, document D2 discloses that the plurality of mould cavities is fluidly connected to only a single (3) first composition injector and to only a single (4) second composition injector.

4 DEPENDENT CLAIMS 3, 5, 6, 8

Dependent claims 3, 5, 6, 8 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Article 33(3) PCT).

- 4.1 The additional features of dependent claim 3, i.e. "a plurality of inlet orifices (58)", is considered common general knowledge in the field of in-mould-coating. See e.g. document D3 (paragraph 20: "In some instances due to the complexity of the substrate more than one nozzle may be required...").

The skilled person would therefore regard it as a normal design option to include these features in the apparatuses described in each of documents D1 or D2 in order to solve the problem posed.

- 4.2 With regard to the additional features of dependent claim 4, document D2 already discloses a "tapered portion adjacent each of said inlet orifices" (see figure 2). The basis for the problem-solution-approach analysis therefore remains unchanged.

- 4.3 With regard to the additional features of dependent claim 5, document D4 discloses thick areas ("thick wall part 4") in the thermoplastic substrate which upon shrinkage "aid flow of a thermosetting resin", since they serve as "flow channel".

Further, D4 discloses the possibility that the "thermosetting resin inlet is the same as the thermoplastics inlet at the time of injection molding" (paragraph 10 of the Japanese patent).

Therefore, the person skilled in the art will automatically arrive at a "second injector



passageway fluidly connected to said at least one second composition injector and said runner section", if he applies the teaching of D4 to a multi-cavity mould as disclosed in any of documents D1 to D3.

The additional feature "smaller cross-sectional area" of dependent claim 4 is considered a normal design procedure, respectively one of several straightforward possibilities from which the skilled person would select, depending on the desired flow of thermosetting coating composition, without the exercise of inventive skill, in order to solve the problem posed.

- 4.4 With regard to the additional features of dependent claim 6, document D4 already discloses a "flat portion" (see shape of "thick wall part 4"). The basis for the problem-solution-approach analysis therefore remains unchanged.

- 4.5 The subject-matter of dependent claim 8 does not meet the requirements of Article 6 PCT, since it is not clear. The features "that directs... mold cavities (34, 36)." relate to a method of using the apparatus rather than clearly defining the apparatus in terms of its technical features. The intended limitations are therefore not clear from this claim, contrary to the requirements of Article 6 PCT.

With regard to the feature "containment flange", no definition of how such a flange actually controls flow seems to be given in the description. In addition to that, figure 5 does not seem to shed light on that issue, either.

Therefore, the subject-matter of claim 8 is considered unclear, contrary to the requirements of Art. 6 PCT. No opinion on inventive step can be given.

5. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1 to D4 is not mentioned in the description, nor are these documents identified therein.

## Claims:

1. A molding apparatus, comprising:  
mold members (12,14) defining a plurality of mold cavities (34,36);  
a first composition injector (30) fluidly connected to said plurality of mold cavities (34,36) for injection molding molded articles therein; and  
a second composition injector (32) having a single nozzle (64) fluidly connected to each of said plurality of mold cavities (34,36) for in-mold coating said molded articles in said plurality of mold cavities (34,36) said mold members (12,14) and said injectors (30,32) configured to injection mold and in-mold coat molded articles in said mold cavities (34,36) while said mold members (12,14) remain a fixed distance apart relative to one another during and between injection molding and in-mold coating..
2. The molding apparatus of claim 1 further including:  
a sprue passageway (38) fluidly connected to said first composition injector (30);  
and  
a runner section (40) fluidly connected to said sprue passageway (38) and said plurality of mold cavities (34,36).
3. The molding apparatus of claim 2 wherein said runner section (40) includes a plurality of portions (54,56) fluidly connected to each of said plurality of mold cavities (34,36) at a plurality of inlet orifices (58).
4. The molding apparatus of claim 3 wherein said runner section (40) includes a tapered portion (60) adjacent each of said plurality of inlet orifices (58) for allowing relatively easy removal of thermoplastic material formed in said runner section (40) from said molded articles formed in said plurality of mold cavities (34,36).
5. The molding apparatus of one of claims 2-4 further including:  
a second injector passageway (62) fluidly connected to said second composition injector (32) and said runner section (40), said second injector passageway (62) having

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a smaller cross-sectional area that said runner section (40) adjacent an intersection (68) between said second injector passageway (62) and said runner section (40).

6. The molding apparatus of claim 5 wherein a portion of said runner section adjacent said intersection (68) is relatively flat.

7. The molding apparatus of one of claims 1-6 wherein each of said plurality of mold cavities (34,36) has a fixed volume that remains fixed when said at least one first composition injector injection molds said molded articles and when said at least one second composition injector in-mold coats said molded articles.

8. The molding apparatus of one of claims 2-7 wherein said runner section (40) includes a containment flange recess (40a) for forming a containment flange that directs in-mold coating injected from said second composition injector (32) toward said plurality of mold cavities (34,36).

9. The molding apparatus of one of claims 1-9 wherein said plurality of mold cavities (34,36) is fluidly connected to only a single first composition injector (30) and is fluidly connected to only a single second composition injector (32).

10. A molding apparatus, comprising:  
mold members (12,14) defining a plurality of mold cavities (34,36);  
a means (30) for injection molding molded articles in said plurality of mold cavities (34,36);  
a means (32) for in-mold coating said molded articles in said plurality of mold cavities (34,36); and  
a means (24) for holding said mold members (12,14) a fixed distance relative to one another during and between injection molding and in-mold coating of said molded articles.

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## Claims:

1. A molding apparatus, comprising:  
a mold (12,14) defining a plurality of nonrotatable mold cavities (34,36);  
a first composition injector (30) fluidly connected to said plurality of mold cavities (34,36) for injection molding molded articles therein; and  
a second composition injector (32) fluidly connected to each of said plurality of mold cavities (34,36) for in-mold coating said molded articles in said plurality of mold cavities (34,36).
2. The molding apparatus of claim 1 further including:  
a sprue passageway (38) fluidly connected to said first composition injector (30);  
and  
a runner section (40) fluidly connected to said sprue passageway (38) and said plurality of mold cavities (34,36).
3. The molding apparatus of claim 2 wherein said runner section (40) includes a plurality of portions (54,56) fluidly connected to each of said plurality of mold cavities (34,36) at a plurality of inlet orifices (58).
4. The molding apparatus of claim 3 wherein said runner section (40) includes a tapered portion (60) adjacent each of said plurality of inlet orifices (58) for allowing relatively easy removal of thermoplastic material formed in said runner section (40) from said molded articles formed in said plurality of mold cavities (34,36).
5. The molding apparatus of one of claims 2-4 further including:  
a second injector passageway (62) fluidly connected to said second composition injector (32) and said runner section (40), said second injector passageway (62) having a smaller cross-sectional area than said runner section (40) adjacent an intersection (68) between said second injector passageway (62) and said runner section (40).

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6. The molding apparatus of claim 5 wherein a portion of said runner section adjacent said intersection (68) is relatively flat.

7. The molding apparatus of one of claims 1-6 wherein each of said plurality of mold cavities (34,36) has a fixed volume that remains fixed when said at least one first composition injector injection molds said molded articles and when said at least one second composition injector in-mold coats said molded articles.

8. The molding apparatus of one of claims 2-7 wherein said runner section (40) includes a containment flange (40a) that directs in-mold coating injected from said second composition injector (32) toward said plurality of mold cavities (34,36).

9. The molding apparatus of one of claims 1-9 wherein said plurality of mold cavities (34,36) is fluidly connected to only a single first composition injector (30) and is fluidly connected to only a single second composition injector (32).

10. A molding apparatus, comprising:  
a mold (12,14) defining a plurality of mold cavities (34,36);  
a means (30) for injection molding molded articles in said plurality of mold cavities (34,36); and  
a means (32) for in-mold coating said molded articles in said plurality of mold cavities (34,36).

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